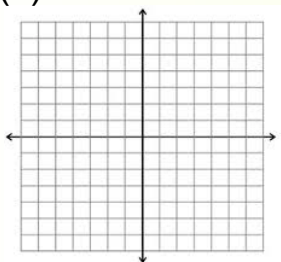


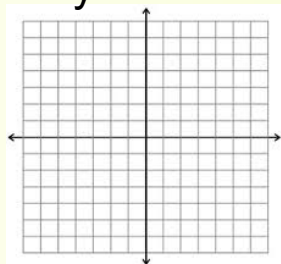
Precalc Warm Up # 2-1

Quick Graph (w/out grapher
choose fastest approach)

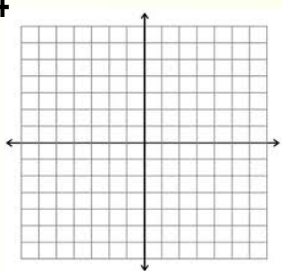
1. $f(x) = 4 - \frac{2}{5}x$



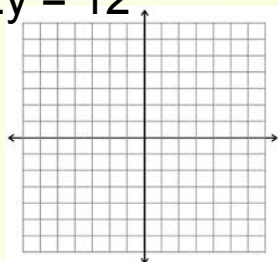
2. $8x - 4y = 24$



3. $x = 4$



4. $2y = 12$



HW questions? p. 25

4. (c) $ax = b(a - x)$

(f) $abx \left(\frac{1}{a} + \frac{1}{x} \right) = \frac{1}{b} (abx)$

$x \neq a$
 $x \neq b$

(i) $\frac{a}{b-x} = \frac{b}{a-x}$

$a^2 - ax = b^2 - bx$

$bx - ax = b^2 - a^2$

$x(b-a) = (b+a)(b-a)$

$x = b + a ; a \neq b$

5. (c) $\left|2 - \frac{1}{3}x\right| = 4$

(f) $\left|2x + \frac{1}{4}\right| = 1$

(i) $\left|\left(\frac{2}{3}x + 1\right)\right| = 1$

(l) $|2ax - b| = 3b \rightarrow b \geq 0$

$$2ax - b = 3b \quad \text{or} \quad 2ax - b = -3b$$

$$2ax = 4b$$

$$x = \frac{2b}{a}$$

$$\frac{2ax = -2b}{2a \quad 2a}$$

$$x = -\frac{b}{a}$$

EXERCISES 2.2.2 p. 28

1. Solve the following inequalities.

(c) $x + 1 > \frac{x + 3}{2}$

(f) $1 - 3x < 5x - 2$

2. (c) $\frac{x}{5} + \frac{2 - 3x}{3} \geq -\frac{2}{3}$

$$3x + 10 - 15x \geq -20$$

$$\frac{-12x \geq -40}{-12 \quad -12}$$

$$x \leq \frac{10}{3}$$

3. Solve the following inequalities.

$$(c) \quad \frac{x}{a} + \frac{b}{a^2} < \frac{4x}{a} - \frac{b}{a^2}, b > a > 0 \quad (d) \quad \left(x + \frac{x-1}{a+1}\right) \geq \left(\frac{x+1}{a+1} - ax\right) \quad \boxed{a > 0}$$

$$ax + x + \frac{x-1}{+1} \geq \frac{x+1}{+1} - a^2x - ax$$

$$2ax + x + a^2x \geq 2$$

$$\frac{x(a^2 + 2a + 1)}{(a+1)^2} \geq \frac{2}{(a+1)^2}$$

$$x \geq \frac{2}{(a+1)^2}$$

4. Solve the following inequalities.

$$(c) \quad |4x - 2| \leq 8$$

$$(f) \quad |3x + 3| \leq 12$$

$$(i) \quad \left|3x + \frac{1}{2}\right| \leq \frac{3}{4}$$

$$-8 \leq 4x - 2 \leq 8$$

$$-\frac{6}{4} \leq \frac{4x}{4} \leq \frac{10}{4}$$

$$-\frac{3}{2} \leq x \leq \frac{5}{2}$$

5. Solve the following inequalities.

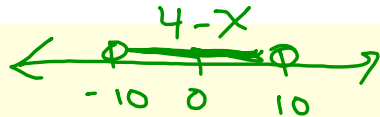
(c) $\left|1 - \frac{x}{2}\right| \geq 7$

(f) $12 - |4 - x| > 2 \rightarrow -|4 - x| > -10$

(i) $\left|3 - \frac{x}{2}\right| \geq 5$

$$|4 - x| < 10$$

$$-10 < 4 - x < 10$$



$$\frac{-14}{-1} < -x < \frac{6}{-1}$$

$$14 > x > -6$$

$$\boxed{-6 < x < 14}$$

6. For what value(s) of p does $\left|\frac{3x}{2} - 7\right| \leq p - 3$ have no solutions?

pos #
or
zero

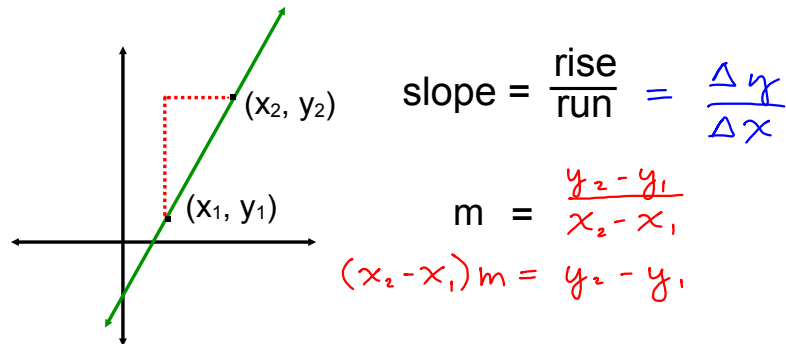
$p - 3$ must be
negative to
have no solution

$$p - 3 < 0$$

$$\boxed{p < 3}$$

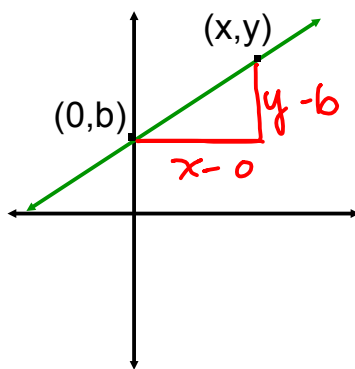
Writing line equations:

We know how to calculate the slope (gradient)



This leads us to an equation for a line,
in Point-Slope form (gradient-point)

$$y - y_1 = m(x - x_1) \quad (x, y) \text{ is any pt on the line}$$



Using the definition of slope, we can get slope-intercept form of a line.

$$xm = \frac{y - b}{x - 0} \cdot x$$

$$mx = y - b$$

$$y = mx + b$$

3 forms for a line:

slope-intercept form (gradient-intercept)

$$y = mx + b$$

Use if you know y-int

point-slope form (gradient-point)

$$y - y_1 = m(x - x_1)$$

Use with $\begin{cases} (x, y_1) \\ \& \text{slope} \end{cases}$

standard form

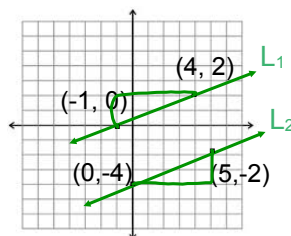
$$Ax + By = C ; A, B, C \text{ are integers}$$

$A > 0$

Parallel lines have the same slope.

$$m_1 = \frac{2}{5}$$

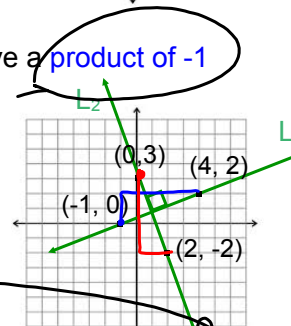
$$m_2 = \frac{-2}{-5} = \frac{2}{5}$$



The slopes of Perpendicular lines have a product of -1

$$m_1 = \frac{2}{5} \quad \frac{2}{5} \cdot -\frac{5}{2} = -1$$

$$m_2 = \frac{-5}{2} = \frac{5}{-2} = -\frac{5}{2}$$



opposite & reciprocal
sign

\perp slopes

1. Find equation of the line that passes through

x, y
 $(-4, 9)$ and $(1, 0)$

$$m = \frac{9 - 0}{-4 - 1} = -\frac{9}{5}$$

$$y - y_1 = m(x - x_1)$$

$$y - 9 = -\frac{9}{5}(x + 4)$$

or $y = -\frac{9}{5}(x - 1)$

2. Find equation of the line parallel to the line in problem 1,

but passes through $(-5, 7)$ $\rightarrow m = -\frac{9}{5}$

$$y - 7 = -\frac{9}{5}(x + 5)$$

3. Find the equation of the line perpendicular to the line in

problem 1, but passes through $(2, 4)$ $m_{\perp} = \frac{5}{9}$

$$y - 4 = \frac{5}{9}(x - 2)$$

4. The lines $px - 7y + 3 = 0$ and $3x - y + p = 0$ are perpendicular. Find the value of p .

$$y = mx + b$$

$$y = \frac{px}{7} + \frac{3}{7}$$

$$y = 3x + p$$

opp & reciprocal
Slopes

product of slopes
 $= -1$

$$\frac{7}{3} \cdot \frac{p}{7} \cdot \frac{3}{1} = -1 \cdot \frac{7}{3}$$

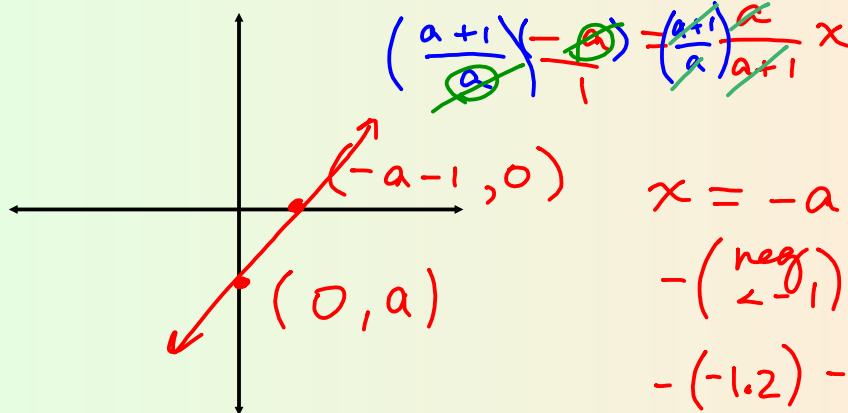
$$p = -\frac{7}{3}$$

5. Graph $f(x) = \frac{a}{a+1}x + a$ where $a < -1$

label x- and y- intercepts

$$m = \frac{a}{a+1} \quad \frac{-\#}{-\#} \quad (+)$$

$$0 = \frac{a}{a+1}x + a$$



$$x = -a - 1$$

$$- (\text{neg}) - 1$$

$$- (-1.2) - 1$$

$$1.2 - 1$$

+

HW: SL book

p. 32 #1-2 MC, 3-10 (label graphs with the x and y intercepts as ordered pairs.)

p. 37 #1 LC, 2i, 3i (all by hand, show process!)

HW Quiz Tomorrow:

SL book p. 20, 25, 28

Quiz Thursday: SL 2.1 - 2.3